

Tutoring: By non-certificated adults, small-group, structured Pre-K to 12 Education

Benefit-cost estimates updated December 2016. Literature review updated June 2014.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our [Technical Documentation](#).

Program Description: The programs included in this analysis are structured, systematic approaches to tutoring small-groups of struggling students in grades K–4 in specific English language arts and/or mathematics skills. The evaluated programs include a variety of specific programs and curricula such as (in no particular order) Quick Reads, Gottshall Early Reading Intervention, and Hot Math. The evaluated tutoring programs provide, on average, 22 hours of tutoring time to groups of two to six (usually three) early elementary students. Tutors are typically instructional aides or college student volunteers who receive 20 hours of training each year. Certificated teachers provide oversight and planning support.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	\$2,215	Benefit to cost ratio	\$15.59
Participants	\$4,590	Benefits minus costs	\$7,951
Others	\$1,925	Chance the program will produce	
Indirect	(\$234)	benefits greater than the costs	77 %
<u>Total benefits</u>	<u>\$8,496</u>		
<u>Net program cost</u>	<u>(\$545)</u>		
Benefits minus cost	\$7,951		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our [Technical Documentation](#).

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:¹

Benefits to:

	Participants	Taxpayers	Others ²	Indirect ³	Total
Labor market earnings associated with test scores	\$4,709	\$2,138	\$2,094	\$0	\$8,941
Health care associated with educational attainment	(\$36)	\$132	(\$144)	\$66	\$18
Costs of higher education	(\$83)	(\$55)	(\$26)	(\$27)	(\$191)
Adjustment for deadweight cost of program	\$0	\$0	\$0	(\$272)	(\$272)
Totals	\$4,590	\$2,215	\$1,925	(\$234)	\$8,496

¹In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

²"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

³"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

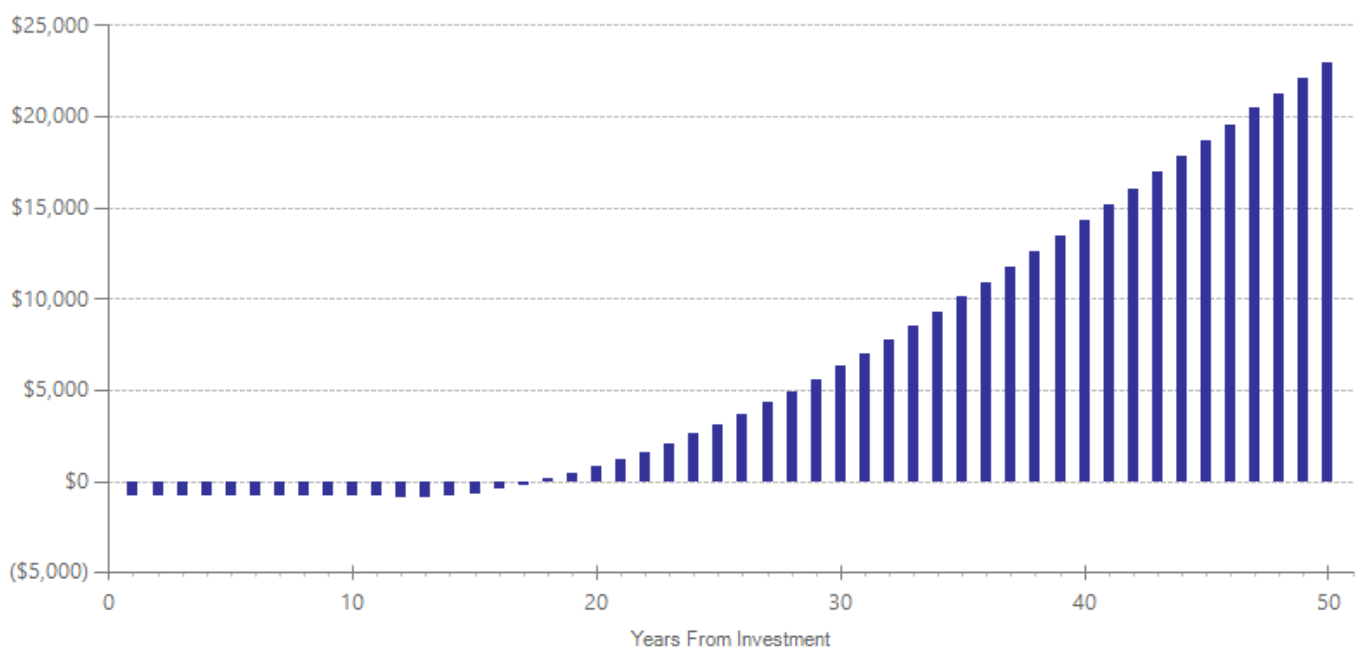
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary
Program costs	\$536	2013	Present value of net program costs (in 2015 dollars) (\$545)
Comparison costs	\$0	2013	Cost range (+ or -) 10 %

In the evaluations included in this meta-analysis, a non-certificated adult (such as an instructional aide or college student) provides, on average, 22 hours of tutoring to six students per year in groups of three and receives 20 hours of training. A certificated teacher provides six hours of planning support and oversight per group. To calculate a per-student annual cost, we used average Washington State compensation costs (including benefits) for K-8 teachers and instructional aides as reported by the Office of the Superintendent of Public Instruction, divided by the total number of students served.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our [Technical Documentation](#).

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the “break-even” point from a budgeting perspective. If the dollars are negative (bars below \$0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach \$0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above \$0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects										
Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
			First time ES is estimated			Second time ES is estimated				
			ES	SE	Age	ES	SE	Age	ES	p-value
Test scores	9	611	0.126	0.063	7	0.059	0.069	17	0.318	0.001

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our [Technical Documentation](#).

Citations Used in the Meta-Analysis

Case, L.P., Speece, D.L., Silverman, R., Ritchey, K.D., Schatschneider, C., Cooper, D.H., . . . Jacobs, D. (2010). Validation of a supplemental reading intervention for first-grade children. *Journal of Learning Disabilities*, 43, 5.

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Fuchs, L.S., Fuchs, D., Craddock, C., Hollenbeck, K.N., Hamlett, C.L., & Schatschneider, C. (2008). Effects of small-group tutoring with and without validated classroom instruction on at-risk students' math problem solving: Are two tiers of prevention better than one? *Journal of Educational Psychology*, 100(3), 491-509.

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Gottshall, D.L. (2007). *Gottshall early reading intervention: A phonics based approach to enhance the achievement of low performing, rural, first grade boys* (Doctoral dissertation). Denton, TX: University of North Texas.

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